The Role of Public Lands in the Development of a Self-Reliant Energy Policy: Perspective on the Biomass Power Industry

Committee on Resources
United States House of Representatives

March 7, 2001

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Mr. Chairman and Members:

Thank you for the opportunity to address the Committee today.

My name is Robert Judd. I serve as Executive Director of the USA Biomass Power Producers Alliance. Based in Sacramento, California, we are a nation-wide association of owners and operators of biomass power facilities.

THE EXISTING BIOMASS POWER INDUSTRY

The nation's existing biomass power industry is in the business of converting environmental liabilities into clean electricity. Under carefully controlled conditions, our industry combusts more than 20 million tons of cellulosic residues per year — primarily wood waste from forest-related activities — to produce steam which drives a turbine that generates electricity for transmission and distribution to homes and businesses.

Prompted by federal policy and incentives put in place in the late 1970's, what we now recognize as the biomass power industry emerged into its current form between 1985 and 1995. No new facilities have been placed into operation since that time, and electricity output from existing facilities has declined by nearly 20% since 1995, due primarily to declining availability and increasing prices in our fuel supply.

The industry is currently comprised of approximately 85 power plants located in 14 states across the nation. In total, they have the capacity to generate 1,600 megawatts of electricity — or, looked at in another way, enough power to serve the needs of 1.5 million households. These facilities represent a capital investment in excess of $7 billion and they provide significant levels of rural employment and property tax revenues in the jurisdictions in which they are located.

In addition to the 85 operating facilities, there are approximately 15 facilities that are operable but currently sit idle due to local market conditions.

For clarification, I would note that the facilities described in my testimony were constructed for the sole purpose of generating clean electricity from the combustion of certain organic residues. They are distinct from other facilities that generate electricity from the combustion of municipal solid waste or from residues within the pulp and paper manufacturing sector.

Decisions concerning the siting of the existing biomass power facilities were primarily determined by the proximity of a sustainable fuel supply. The reason for this is a simple one. The biomass power facilities purchase the waste materials they use as fuel, and the principal component of fuel cost is transportation of materials from point of origin to point of use. In order to minimize fuel costs, the facilities were located as close to their fuel sources as possible. Some facilities are actually located directly at the source of their fuel — at a lumber mill, for example — while others are stand-alone facilities that obtain fuel from a variety of sources within a radius that usually does not exceed 100 miles. Given the decline in mill operations in recent years, few if any of the operating facilities are self-sufficient. All have the need and capacity to derive fuel from external sources.

THE FUEL SUPPLY

Materials used as fuel by the biomass power industry are the residual wastes that remain after all other economic value has been extracted. In effect, the industry recycles material — that would otherwise be discarded — into a product (electricity) that has societal value.

One can view the biomass power industry as a massive waste management system that generates electricity as one of a number of valuable by-products.

Our fuel supply is derived from three major sources. The first and principal source is forest-related activities, which account for roughly 75% of our total supply. Within this category, materials include slash and brush from commercial timber harvest operations (we use the branches and tops after the tree has been sent to the mill), bark and excess sawdust from timber processing, and materials derived from thinning of overly-dense vegetation in order to reduce the risk and severity of forest fires. The biomass power industry is, in reality, the "garbage man" for the forestry sector. We gather and use only those materials that are worthless to someone else. If a certain material has more value as a pulp chip or as an input to another commercial product, the market will drive it in that direction rather than to us.

Our second source of fuel is agricultural residues, which comprise approximately 15% of our total supply. These materials include orchard tree prunings and removals, as well as residuals from sugar manufacturing and rice milling.

Our third and final source of fuel is urban wood waste diverted from landfill disposal. Included here are broken pallets and shipping containers, leftovers from construction and manufacturing activities, and selected other materials. Fuel specifications provided to our fuel brokers require the exclusion of paper that is commonly recycled and materials that are toxic or hazardous. Our industry simply cannot afford to find hazardous chemicals in our air emissions or our ash, so we take all necessary precautions to exclude them at the front end of the process.

PUBLIC BENEFITS OF BIOMASS POWER GENERATION

The biomass power industry has a number of unique characteristics that are germane to the subject of this hearing and are particularly relevant as our new President develops and introduces a national energy policy within the next few weeks.

In late 1999, the U.S. Department of Energy published an independent research report entitled *The Value of the Benefits of U.S. Biomass Power*, which compared the impacts of biomass energy production with that of the most probable alternative fate of the residues we use as fuel. The report also attempted to quantify (monetize) the value of the non-electric benefits of biomass power production in terms of criteria air pollutants, greenhouse gas emissions, landfill capacity use, forest and watershed improvement, rural employment and economic development, and energy diversity and security.

The findings of this report are notable and important. In an industry where the average cost to deliver a kilowatt-hour of electricity is 6 ½ cents – 7 cents, the report concludes that "Based on a base-case, conservative analysis, the value of the environmental services (described above) associated with biomass energy production in the United States is 11.4 cents per kilowatt hour." In other words, the environmental benefits are 63% more valuable than the electricity itself or, alternatively, each unit of electricity produced delivers a substantial environmental bonus that is not reflected in the price of the electricity itself. This bonus reflects the public "externality" value of biomass power and forms the basis for its inclusion in a sensible national energy policy.

Further, the report cites recent research which estimates the savings in ultimate cost, on a net-present value (NPV) basis, of using mechanical thinning for forest treatment versus a regime of prescribed burns that must be carried out over a number of years to achieve the same degree of forest improvement. The mechanical thinning, followed five years later by a prescribed burn, has a cost (NPV) of $432 per acre. The alternative of three

prescribed fire treatments during a 20-year period has a cost (NPV) of $560 per acre for a net savings of $128 per acre using the mechanical thinning and fuel production alternative. These savings do not include the reduction in air emissions during the various burns, the reduction in residual stand damage, or the diminished risk of prescribed burns flaring out of control. Moreover, there is an immediate value of benefits realized from the mechanical thinning/fuel production option versus the delayed benefits from multiple prescribed burn testaments.

The public benefits of the biomass power industry are derived from the gathering, processing, and delivery of its fuel supply rather than from its generation of electricity. This characteristic distinguishes the biomass sector from all other energy technologies. As mentioned earlier, the biomass power industry pays to acquire its fuel. Consequently, an entire infrastructure has been established to provide the services needed to obtain and deliver the fuel to us, and this infrastructure is funded and sustained by the substantial per-ton payments we make to acquire our fuel. Our purchases support contractors who undertake pre-fire thinning in the public and private forests, with appropriate permits, to reduce forest fire risk and to remove excess biomass that depresses forest health and productivity and degrades the functioning of watersheds. Our purchases also support similar services in the agricultural sector to chip and deliver orchard prunings and other materials that would otherwise be a major source of air pollution when they are burned in the open field.

It is widely recognized that the level of direct and indirect rural employment is higher in the biomass power industry than in any other renewable energy technology.

BIOMASS POWER AND PUBLIC LANDS

In those instances in which biomass power facilities are located in relative proximity to public lands, they have the capability to play an important role in generating electricity from wood waste derived from those lands. The biomass facilities provide a destination and a productive use for removed materials that otherwise would be an environmental liability. The facilities have the capacity to utilize a high volume of materials on a continuous basis, and the availability of fuel beyond current levels would optimize electricity output at a time when many states, particularly in the West, are faced with distressing shortages.

It is fair to note, however, that the correlation between the location of biomass power facilities and the location of public lands is less than perfect. In some parts of the country — from northern California up through Oregon and Washington and into Idaho — there is excellent correlation. Elsewhere, in Maine, for example, there is none. In northern Michigan, there is a good match.

Due to constraints on commercial timber harvesting and modest efforts so far to implement mechanical thinning of overly dense woodlands, our facilities — even when they are proximate to public lands — have obtained a diminishing percentage of their fuel from these lands in recent years. When possible, our operators have replaced public-lands fuel with materials from private lands and, increasingly, with fuel derived from the urban waste stream. This is an unfortunate economic necessity if we are to maintain our electricity generation levels.

Perhaps a few examples can illuminate the difficulties our facilities have faced in obtaining fuels from public lands. You may be aware that the U.S. Forest Service imposed a moratorium on all commercial activities in California's Sierra Nevada, effective December 11, 2000. Its intent was not focused on the biomass industry, but an

inadvertent consequence of its action was to abort fuel supply contracts that were already in place. This action unexpectedly disrupted power production at our facilities and forced our managers to scramble for replacement fuel on the spot market where they had no choice but to pay top dollar. Sixteen of California's 28 operating biomass power facilities depend, to a greater or lesser degree, on fuels derived from public lands. These facilities generate over 250 megawatts of electricity, a critical supply in an energy emergency. One of the California facilities – Honey Lake Power – terminated its operations due to a lack of fuel and will not reopen until this May at the earliest.

Numerous other examples exist. The Boise-Cascade biomass power facility at Emmet, Idaho just announced permanent closure due to inadequate fuel supplies from federal lands. Two of the other three biomass facilities in Idaho are also out of service at present. Additionally, the absence of activity on public lands in northern Michigan has limited fuel availability and constrained normal output.

In sum, there is an unmet potential to use biomass from public lands for electricity production purposes. While some facilities proximate to public lands can maintain high output by using alternative fuels, others do not have that option. The point to be made is that federal policy should encourage the biomass power facilities to use as fuel those materials that would otherwise present the highest level of environmental risk. Certainly the overly dense vegetation that increases forest fire risk on public lands meets this criterion. The opportunity to convert these undesirable materials into a productive use, however, is quite limited under current conditions.

PRICING AND ECONOMIC CONSIDERATIONS

Briefly, it is worth noting that biomass power facilities are increasingly sensitive to fuel costs. In order to compete in deregulated electricity markets, which reward the lowest-

cost provider and give no value to external benefits such as those described earlier, the biomass power facilities must reduce their fuel costs to the lowest possible level.

For example, many biomass power facilities pay in the range of $40 per ton for wood chips delivered to their facilities as fuel. Each $10 they pay for fuel equates to 1 cent per kilowatt hour on the cost of their electricity. At $40 per ton (an average price for a ton of forest-derived fuel) the facilities are paying out approximately 2/3 of their income (4 cents out of 6 ½ cents) for fuel alone. Going forward, the remaining income of 2½ cents may be inadequate to cover the costs of operations and maintenance, labor, debt service, and administration. Many facilities now need to reduce fuel costs if they are to maintain full productivity and continue to provide the environmental and economic benefits that serve the public good.

This issue is pertinent here because the cost of biomass fuels removed from public lands will have to be measured against the cost of all other available fuels. Just because public-land fuels may be available, there is no certainty that they will be utilized unless they are competitively priced. An opportunity exists here to shape federal policy, perhaps in the form of priority fuel use incentives, to ensure that biomass power facilities turn first to residuals from public lands.

LOOKING AHEAD

There is a solid case that can be made for optimizing the electricity output of the nation's existing biomass power facilities, including those that are operating at present and those that are currently idle. They generate clean renewable electricity and, as an inherent bonus, remedy a range of environmental and economic problems. This industry could provide a worthwhile service – and a higher level of service – to federal land managers if certain policies were enacted. Biomass power facilities can and should be integrated into the implementation of the National Fire Plan whenever possible. They can also help

fulfill they promise of the Herger-Feinstein Quincy Library Group legislation which will test large-scale, progressive strategies for land management and fire risk reduction.

Additionally, there is a demonstrable need for the construction of new biomass power facilities in many regions of the country that are currently unserved or under-served. In light of the millions of acres of public lands in states like Alaska, New Mexico, and Montana, it is surprising that no biomass power facilities exist there at all. Other states like Oregon, Washington, and New York have only a handful of facilities.

In order to move ahead with new projects, developers need certainty about long-term fuel availability at affordable contract prices and they need to know that they will receive a reasonable price for their electricity over an extended period of time. The rest is mostly engineering. The federal government could accelerate the construction of the next generation of biomass power facilities in those locations where they are most appropriate and needed by reaching out with encouragement and assistance to the private sector.

Biomass materials from public lands can also be co-fired in existing power plants that use coal as a primary fuel. By substituting a certain percentage (5% - 10%) of biomass materials for coal, certain criteria air pollutants can be reduced without diminishing electrical output. There may in some instances be a locational match between public lands and coal-fired power plants that make this an attractive option.

Finally, there is an emerging opportunity to use biomass materials from federal lands as a feedstock for ethanol production. While ethanol and its tax credit are not without controversy, evaluation of its merits in a scenario in which an ethanol distillation facility is co-located with an existing biomass power facility is underway at a number of sites. Attractive engineering and fuel efficiencies appear to be within reach.

RECOMMENDATIONS

To ensure the availability of the nation's existing biomass power facilities as a productive-use destination for materials removed from public lands for fire risk reduction or other commercial purposes, our primary recommendation is to provide the industry with a much-needed production tax credit similar to the one that has been provided to the wind energy industry since 1992. Our industry is in turmoil now as fuel supplies contract and electricity markets are radically reshaped. The production tax credit would increase the electricity generated by the industry and would stabilize its operations at a time when many fear reductions or closure in the near future. Legislation which includes this production tax credit is known as the Energy Security Act of 2001 and has recently been introduced in the Senate.

From a broader perspective, the nation also needs an articulated biomass management policy as a context for future decision-making. None exists now, even though we have an abundance of biomass waste materials that are a latent source of products, wealth, and environmental benefits. Intelligent utilization of our biomass resources is the cornerstone of self-reliance for electricity production and other desirable purposes.

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